Five-Year Review Report

Five-Year Review Report
for
H.O.D. Landfill Site
Antioch, Lake County, Illinois

September 2005

PREPARED BY:

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Approved By:

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Date:

9/30/05

Five-Year Review Report

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Attachments

List of Acronyms

ARARs	Applicable or Relevant and Appropriate Requirements
BLRA	Baseline Risk Assessment
CD	Consent Decree
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
ESD	Explanation of Significant Difference
GSI	Groundwater Surface Water Interface
HASP	Health and Safety Plan
IC	Institutional Control
IEPA	Illinois Environmental Protection Agency
IDPH	Illinois Department of Public Health
KCDPW	Kent County Department of Public Works
LGCCP	Leachate & Groundwater Collection, Conveyance & Pretreatment System
MCLs	Maximum Contaminant Levels
MNA	Monitored Natural Attenuation
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
POTW	Public Owned Treatment Works
ppb	Parts per Billion
PRP	Potentially Responsible Party
RD/RA	Remedial Design/Remedial Action
RDWC	Residential Drinking Water Criteria
RCRA	Resource Conservation and Recovery Act
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
SMCLs	Secondary Maximum Contaminant Levels
SVOC	Semi-Volatile Compound
SWDA	Safe Drinking Water Act
U.S. EPA	United States Environmental Protection Agency
VOCs	Volatile Organic Compounds

Executive Summary

The selected remedy for the H.O.D. Landfill Site in Antioch, Lake County, Illinois included landfill cap improvements, enhanced gas collection and treatment, enhanced leachate collection, leachate treatment, groundwater monitored natural attenuation and institutional controls. The institutional controls included deed restrictions to regulate the development and site use of the H.O.D. Landfill property and groundwater use restrictions in the areas that have contaminated groundwater. The site achieved construction completion with the signing of the Preliminary Close Out Report on June 29, 2001. The inward gradient for the leachate/groundwater should be met on or before 28 August 2012 (i.e. within 12 years). The trigger for this five-year review was the actual start of construction on August 28, 2000.

The assessment of this five-year review found that the remedy was constructed in accordance with the requirements of the Record of Decision (ROD). An Explanation of Significant Difference (ESD) was issued to remove aspects of the remedy that were unnecessarily impeding the reuse of this property. The remedy is functioning as designed. The immediate threats are being addressed and the remedy is currently protective of human health and the environment. Long term protectiveness requires implementation of and compliance with restrictions that prohibit interference with landfill caps, prohibit well drilling and consumptive use of the affected groundwater until groundwater cleanup goals are achieved through monitored natural attenuation.

Five-Year Review Summary Form

SITE IDENTIFICATION		
Site Name: H.O.D. Landfill Site		
EPA ID: ILD980605836		
Region: 5	**State:** Illinois	**City:** Antioch
SITE STATUS		
NPL Status: Final		
Remedial Status: Complete		
Multiple Operable Units? No	**Construction Completion date:** 06-29-2001	
Has site been put into reuse? The construction of reuse has begun.		
REVIEW STATUS		
Lead Agency: U.S. EPA		
Author name: Karen Mason-Smith		
Author title: Remedial Project Manager	**Author affiliation:** U.S. EPA	
Review period: July 28, 2005 through September 22, 2005		
Date of Site Inspection: November 19, 2004 and July 28, 2005		
Type of review: Statutory		
Review number: 1 (First Five-Year Review)		
Triggering Action: RA Construction Start		
Triggering Action Date (*from WasteLan*): August 28, 2000		
Due Date (*five years after triggering action date*): August 28, 2005		

Five-Year Review Summary Form

Deficiencies:

Based on the site inspection, there was evidence of settling around the vaults and in the northern portion of the landfill. This settling may affect future drainage at the H.O.D. Landfill Site. Surface drainage may also be altered because of the land end use (redevelopment/reuse).

The leachate elevation measurement has shown that some of the areas within the landfill may not achieve inward gradient within 12 years. Some of the gas collection wells are showing high oxygen suggesting oxygen leakage into the system.

Recommendations and Follow-up Actions:

U.S. EPA recommends that Waste Management Inc. improve drainage and fill settled areas around the vaults and in the northern portion of the landfill by June 30, 2006; increase the leachate withdrawal rates from the leachate wells so that the inward gradient can be achieved within 12 years; and evaluate gas collection wells for oxygen leakage.

U.S. EPA recommends that Waste Management Inc. submit an IC Plan to evaluate and fully implement land and groundwater use restrictions at the Site.

Protectiveness Statement:

The remedy is functioning as intended and is currently protective of human health and the environment. The Village Ordinance effectively prohibits the use of contaminated groundwater at and near the landfill site. The site fence, landfill cap, landfill gas management system, leachate collection and storage system are functional and meeting the objectives outlined in the ROD. Long term protectiveness requires full implementation of, and compliance with, restrictions that prohibit interference with the landfill caps and prohibit well drilling or consumption of affected groundwater until groundwater cleanup standards are achieved.

H.O.D. Landfill Site
Antioch, Illinois
Five-Year Review Report

I. Introduction

The purpose of the five-year review is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, five-year review reports identify deficiencies, if any, found during the review and identify recommendations to address them.

The Agency is preparing this Five-Year Review report pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgement of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The Agency interpreted this requirement further in the NCP. 40 CFR §300.430(f)(4)(ii) states:

> *If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.*

The United States Environmental Protection Agency (U.S. EPA), Region 5, conducted the first five-year review of the remedy implemented at the H.O.D. Landfill Site in Lake County, Antioch, Illinois. This review was conducted by Ms. Karen Mason-Smith, Remedial Project Manager for the entire site from July 28, 2005 through September 22, 2005. This documents the results of the review.

This is the first five-year review for the H.O.D. Landfill Site. The triggering action for this statutory review is August 28, 2000, which is the start date of the remedial action (RA) on-site construction . The five-year review is required due to the fact that hazardous substances,

pollutants, or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure.

II. Site Chronology

Table 1: Chronology of Events

Event	Date
Operation of Site as dump by Cunningham Cartage and Disposal Company	1963 - 1965
Operation of Site as dump by H.O.D. Disposal, Inc.	1965 - 1972
Operation of Site as dump by C.C.D. Disposal, Inc. & Waste Management, Inc. (WMII); new area as hazardous waste landfill by WMII	1972 - 1984
WMII submitted CERCLA 103(c) Hazardous Waste Site Notification Form to U.S. EPA	6/1981
U.S. EPA conducted PA/SI and ESI	1983 - 1989
Landfill closed and soils capped under IEPA	1989
Site placed on National Priorities List (NPL)	02/21/1990
Administrative Order by Consent to conduct RI/FS	08/20/1990
PRP Remedial Investigation/Feasibility Study (RI/FS) Reports and Baseline Risk Assessment approved by U.S. EPA	1997
RI/FS Reports and Proposed Plan identifying U.S. EPA's preferred remedy released for public comments	07/22/1998
Record of Decision (ROD) signature	09/28/1998
Consent Decree (CD) to perform Remedial Design/Remedial Action (RD/RA) entered in U.S. District Court	04/14/1999
U.S. EPA approves Final RD/RA Construction Report	08/09/2000
RA Construction begins	08/28/2000
RA Construction Completed	06/29/2001
Preliminary Close Out Report (PCOR)	06/29/2001

Event	Date
Landfill Cap Upgrade; Fence Installation; Leachate Collection, Conveyances and Storage System; and Gas Collection and Treatment System completed	2002
RMT Inc. began construction of gas to energy system for Antioch High School	12/2002
Risk Assessment and Exposure Pathway Analysis for End Use Plan Submitted	8/2003
Explanation of Significant Difference (ESD)	08/28/2003
Start Up of Gas to Energy System for Antioch High School	12/2003
Preparation for implementation of End Use Plan	07/2004

III. Background

Physical Characteristics

The H.O.D. Landfill Superfund Site occupies 121 acres, including a 51-acre former solid waste landfill, located north of Route 173 and east of McMillen Road in Antioch, Illinois. The site is bordered on the south and west by Sequoit Creek. Silver Lake is located approximately 200 feet southeast of the Site (see Site Location Map, Attachment A, Figure 1). Although the landfill area is continuous, it consists of two separate landfill areas, identified as the "old landfill" and the "new landfill." The "old landfill" consists of 24.2 acres situated on the western third of the property. The "new landfill" consists of 26.8 acres located immediately east of the "old landfill." The two landfill areas have been legally delineated under an Illinois Environmental Protection Agency (Illinois EPA) permit. The location of the two landfill sections is shown on the Site Diagram (Attachment A, Figure 2).

Land and Resource Use

The H.O.D. Landfill Site was classified by Illinois EPA as a municipal solid waste landfill. Permitted waste disposal activities began at the Site in approximately 1963 and continued through approximately 1984. Currently, the landfill is inactive and fenced with access restrictions. The Village of Antioch Water Works and Sewage Ordinance prohibits the use of groundwater and installation of drinking water wells in the vicinity of the landfill, by requiring use of the public waterworks and sewer system. (See Attachment C).

The Site is currently zoned as "M2," according to the Village of Antioch. This designation covers special use manufacturing and industrial purposes, and includes landfills. The

Site was closed and capped under an Illinois EPA permit in 1989. Sequoit Acres Industrial Park has been designated an "M1" (light industrial) zoning area by the Village of Antioch.

The current and projected land uses for the area surrounding the landfill site are for ecological and recreational reuse purposes. U.S. EPA has identified the H.O.D. Landfill Site as an EPA Headquarters' Superfund Redevelopment Initiative (SRI) Pilot Site. The reuse framework for the site includes environmental education areas, wetlands restoration, athletic fields and recreational areas.

History of Contamination

The H.O.D. Landfill Site has been owned and operated by three distinct companies:

- Cunningham Cartage and Disposal Company (1963 - 1965)
- H.O.D. Disposal, Inc. (1965 - 1972)
- C.C.D. Disposal, Inc. (1972 - present, including merger with Waste Management of Illinois, Inc. (WMII)

Murrill Cunningham, owner, operator and president of the Cunningham Cartage and Disposal Company, operated a 20-acre landfill (much of the "old landfill" area) at the Site from 1963 until August 1965. The property was then purchased by John Horak and Charles Dishinger, who operated the Site under the name of H.O.D. Disposal Inc. In December 1972, the 20-acre landfill was conveyed to C.C.D. Disposal Inc., and C.C.D. Disposal Inc. purchased the adjacent 60-acres of land to the east of the Site. WMII merged with H.O.D. Disposal Inc. in December 1972 and C.C.D. Disposal Inc. in June 1973, gaining ownership of the entire Site. An eastern portion of the Site is currently owned by the Village of Antioch. WMII operated the landfill from 1973 until 1984 when the Site stopped accepting waste. During the time WMII operated the landfill, portions of the "new landfill" area were opened for landfilling.

In June 1981, WMII submitted a Hazardous Waste Site Notification Form to U.S. EPA, as required by Section 103(c) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). The form indicated solvents, heavy metals cutting oils and hydraulic oils were disposed of at the Site in addition to municipal waste.

Groundwater samples were collected from on-site monitoring wells on July 10, 1984. Analysis of groundwater samples revealed the presence of elevated concentrations of zinc, lead and cadmium. Analysis of surface water samples did not reveal elevated levels of analyzed parameters. In January 1986, IEPA collected groundwater samples from four residential wells located east of the Site. The samples were analyzed for nitrates, organic compounds and trace metals. The results of the chemical analysis indicated no trace metals and no organic compounds were detected. Leachate containing volatile organic compounds (VOCs) and semi-VOCs contaminated the soil and groundwater.

Initial Response

The U.S. EPA proposed adding the Site to the NPL on September 18, 1985 based on a Site Inspection which found elevated levels of zinc, lead and chromium in the groundwater (50 Federal Register 37,956 (1985)). During the public comment period, WMII challenged the proposed listing of the Site based on disagreement concerning the hazardous ranking score (HRS) and hydrogeological conditions at H.O.D. Landfill. Following the review of all comments, U.S. EPA performed an Expanded Site Inspection (ESI) at the Site.

The ESI led U.S. EPA to rescore H.O.D. Landfill, based in part on a lowered estimate of the level of zinc releases, as well as on newly discovered releases of TCE, trans-1-2-dichloroethylene and total-1-2-dichloroethylene to the groundwater. H.O.D. Landfill was added to the NPL on February 21, 1990 (55 Federal Register 6162 (1990)). An administrative Order on Consent (AOC) was signed by U.S. EPA and WMII in August 1990 to conduct a Remedial Investigation/Feasibility Study (RI/FS) at the H.O.D. Landfill Site. In May 1990, WMII retained Montgomery Watson (formerly Warzyn) to support WMII's RI/FS effort by preparing the Work Plan for a Preliminary Site Evaluation Report/Technical Scope and subsequently performing the RI.

Basis for Taking Action

The main threat to human health identified in the Baseline Risk Assessment (BLRA) is through the ingestion of vinyl chloride-contaminated groundwater. Vinyl chloride, a carcinogen, has appeared in a monitoring well, nearby and downgradient of the Site, at levels above the maximum contaminant level (MCL) of two parts per billion (2 ppb) established by U.S. EPA and above the Illinois Pollution Control Board Groundwater Quality Standards for drinking water aquifers. The National Contingency Plan (NCP) requires remediation of drinking water sources with contaminant levels above MCLs.

Based on results of the BLRA, ingestion of vinyl chloride, a VOC, presents the only significant health risk associated with the Site. The Ecological Risk Assessment concludes that, overall, contaminant concentrations are such that risks to plants, aquatic life and terrestrial wildlife are estimated to be minimal.

IV. Remedial Actions

A. Remedy Selection

U.S. EPA issued a Record of Decision (ROD) on September 28, 1998 specifying the following remedy:

- institutional controls
- waste cap improvements

- enhanced gas collection and treatment
- enhanced leachate collection
- leachate treatment
- groundwater monitored natural attenuation

B. Remedy Implementation

In a Consent Decree (CD) entered into with U.S. EPA, WMII agreed to conduct the RD/RA for the H.O.D. Landfill Site. Site construction began on August 28, 2005. U.S. EPA has determined that all RA construction activities were performed according to specifications. The Preliminary Close Out Report (PCOR) for this site was completed on June 29, 2001.

Restrictive Covenants/Deed Restrictions

Controls have been imposed to restrict access to the site, including upgrading the existing fencing, signs, and gates. The use of groundwater from the site vicinity is prohibited by the Village of Antioch ordinance (Antioch Water Works and Sewage Ordinance, Sections 50.008, 52.009, and 52.011; recodified as Sections 8-1-1 and 8-2-2) requiring properties within the Village limits that abut the public water works and sewerage systems to connect to the municipal water supply system.

Landfill Cover

The existing landfill cover was reconstructed to be compliant with the IAC 807 cover requirements. The landfill cover consists of a minimum 2-foot thick low-permeability layer, followed by a minimum 1-foot thick vegetative soil layer.

Landfill Gas Collection, Conveyance and Treatment

An active landfill gas management system, which consists of 35 extraction wells, has been installed and is operational at the site. The landfill gas is either conveyed through pipes to a fully enclosed refractory flare where the gas is combusted.

Leachate Collection Conveyance, Storage and Disposal

The leachate collection system includes 35 extraction wells and a below-grade 30,000 gallon collection tank located near the southwestern corner of the site. The system has been automated to provide for continuous operation. Leachate withdrawn from the landfill by the pneumatic pump system is transferred through pipes and temporarily stored in a below-grade 30,000 gallon leachate collection tank.

Groundwater Monitoring Program

The list of groundwater monitoring well locations and analytical parameters required for the quarterly monitoring program is presented in Figure 2 (Attachment B).

U.S. EPA has determined that all RA construction activities were performed according to specifications. The Preliminary Close-out Report for the H.O.D. Landfill Site was completed on June 29, 2001.

C. System Operation/Operation and Maintenance

Annual System Operations and Maintenance (O&M) Costs

WMII has claimed that costs associated with O&M are confidential business information. Therefore, this information is not included in this Five-Year Review Report.

Landfill Cover

The landfill cover consists of a minimum 2-foot thick low-permeability layer, followed by a minimum 1-foot thick vegetative soil layer. Regular site inspections include checking for evidence of stressed or sparse vegetation, erosion, settlement, and burrowing animals. When a problem has been identified, WMII has made the necessary repairs to the cover. Documentation of the site inspections, and the repair or maintenance activities performed, is contained in the quarterly and annual reports prepared by WMII.

Landfill Gas Collection, Conveyance and Treatment

An active landfill gas management system, which consists of 35 extraction wells and a blower has been installed and is operational at the site. The landfill gas is conveyed through pipes to a fully enclosed refractory flare where the gas is combusted. The landfill gas flare was initially designed to operate at a flow of between 100 and 600 cubic feet per minute (cfm). Typical gas flow delivered to the flare (prior to utilization of a portion of the gas-for-energy production) ranged from 250 to 350 cfm

The landfill gas system was modified in 2003 to allow for the use of landfill gas from the site to produce electricity and heat in the gas-to-energy system now in operation at the Antioch High School. The gas-to-energy system was started up in December 2003. The gas-to-energy system reduces the amount of landfill gas sent to the flare by approximately 150 to 180 cfm, with the remainder of the gas being routed to the flare.

Since the startup of the gas-to-energy system, the combined gas flow rate to the flare and/or gas-to-energy system ranged from approximately 150 to 315 cfm. The methane concentration in the landfill gas has ranged from approximately 42 to 66 percent for the monitoring period, which is within the expected range.

During 2004, air-operated actuator valves were installed in the gas system header piping within the enclosed leachate/gas systems operation area to allow the gas-to-energy system or the flare to continue to operate separately in the event that either the flare or the gas-to-energy system shuts down. For example, if the flare shuts down as a result of low gas flow or a mechanical problem, the flare is isolated from the gas flow piping, and the landfill gas will be routed directly to the gas-to-energy system to allow for continued collection and combustion of landfill gas.

The regular O&M is conducted either by WMII or their subcontractor for gas collection and treatment system in accordance with the U.S. EPA approved O&M Plan..

Landfill Leachate Collection, Conveyance, Storage and Disposal

A leachate collection system includes 35 extraction wells and a below-grade 30,000 gallon collection tank located near the southwestern corner of the site. The system has been automated to provide for continuous operation. On-site monthly inspections are conducted to verify proper operation of the system, and are contained in the quarterly and annual reports.

Leachate withdrawn from the landfill by the pneumatic pump system is temporarily stored in a below-grade 30,000 gallon leachate collection tank following removal from the waste mass. PATS Service, Inc. (PATS), of New Munster, Wisconsin, transports the collected leachate via tanker truck to the City of Burlington, Wisconsin, Wastewater Treatment Plant.

End Use Plan

The western two-thirds of the site is currently developed into athletic fields for the High School. For the purpose of this use, a Risk Assessment was completed by the Waste Management. A summary of the 2003 Final End Use Plan Risk Assessment is provided here.

The exposure pathway analysis and risk assessment for the H.O.D. Landfill final end use plan was prepared by RMT, Inc., in 2003 to reassess potential risks associated with the conceptual final end use plan for the H.O.D. site. The final risk assessment was submitted to U.S. EPA in August 2003. The 2003 risk assessment was presented in the context of site history; changes to the site since declaration of the ROD in 1998; and recent operations, maintenance, and monitoring of the site. This included changes to the site as a result of the remedial actions that have been taken. Site data, such as those data collected under long-term monitoring, were incorporated into the 2003 risk assessment. Also considered in this risk assessment were changes to toxicity data and potential exposure that have occurred since the BLRA was completed. These changes included different assumptions about the type and/or amount of potential exposure to people and ecological receptors at the site. For example, the BLRA considered people coming on-site through a trespassing scenario, while a recreational scenario was considered for the 2003 evaluation. These changes also included revisions to human health toxicity data, some of which have been revised since 1994 in light of new knowledge and/or

procedures used to develop these values since 1994, and human health and ecological screening toxicity values that have been developed since 1994.

As part of the 2003 risk assessment, available site information was reviewed, including the RI Report, the BLRA, the FS, the Predesign Investigation, and the first three rounds of long-term monitoring data. This risk assessment was performed in accordance with the U.S. EPA's current Risk Assessment Guidance for Superfund and the Ecological Risk Assessment Guidance for Superfund, and supplementary and supporting guidance, as applicable. The site uses included in this document were compiled to provide a basis for completing the risk assessment. The exposure pathway analysis was based on the assumption that redevelopment activity would not compromise the existing site remedy by possibly creating new exposure pathways.

A number of possible exposure pathways were considered in terms of their likelihood of being complete. All of the exposure pathways that were identified as potentially complete pathways in the BLRA were re-evaluated in this final end use plan risk assessment, considering post-remediation site conditions and proposed site final end use. As outlined in the risk assessment, it was not necessary to re-evaluate the following pathways in the 2003 risk evaluation based on the following assumptions:

- Inhalation of airborne chemicals from the landfill - Anyone spending time on or near the landfill area potentially could be exposed to low concentrations of chemicals in landfill gas (LFG) that diffuses through the cover or low concentrations of chemicals from the LFG flare. Exposure to fugitive LFG emissions without the gas extraction system and flare was evaluated in the BLRA for nearby residents using modeled air concentrations for off-site locations. These results showed no unacceptable risks. The current remedy mitigates fugitive emissions of LFG resulting from diffusion through the cover because the gas/leachate extraction system maintains negative pressure (vacuum) within the landfill. The vacuum generated by the extraction system draws LFG from the waste mass to the flare. The LFG collection system currently collects and combusts the collected LFG, thereby further reducing potential off-site exposures to fugitive LFG emissions. The flare has been designed to exceed the requirements of federal regulations, which require a minimum 98 percent destruction efficiency of nonmethane organic compounds (NMOCs). Therefore, the emissions from the flare were considered to be negligible. The gas and leachate extraction system is designed with failsafe measures that minimize the potential for unanticipated exposures in the event of a system shutdown. This system includes automatic notification of operations and maintenance personnel in the event of system interruptions, so that they can respond in a timely fashion, in accordance with the approved O&M Plan.

- Inhalation of airborne chemicals volatilized from surface water - Inhalation of airborne volatile organic compounds (VOCs) could occur for recreational users spending time near, or in, Sequoit Creek. However, exposure is not expected to be significant because

of the extremely low levels of VOCs found in the creek and the low frequency and short duration of visits to the creek.

- Inhalation of airborne chemicals from surface soil VOCs or fugitive dust - Areas of known surface soil contamination were covered with soil from the borrow area as part of the remedial action (RA) construction. Additional cover soils were also added as a result of grade changes for the final end use plan subsequent to RA construction. In addition, maintaining a vegetative cover is required as part of the site remedy. Therefore, volatilization or fugitive dust generation is not expected from the current surface soil under recreational site use or routine maintenance activities.

- Dermal absorption of chemicals in surface soil and/or incidental ingestion of chemicals in surface soil - Areas of potential surface soil contamination were covered with soil from the borrow area as part of the RA construction and subsequent grade changes resulting from the final end use. In addition, maintaining a vegetative cover is required as part of the site remedy. Therefore, skin contact with any impacted soil or the ingestion of buried impacted soil are not expected under recreational site use or routine maintenance activities.

The following exposure pathways were evaluated in the 2003 risk evaluation:

- Dermal absorption of chemicals in surface water - Recreational site users, especially children, could wade or play in the creek, resulting in skin contact with surface water in the creek.

- Dermal absorption of chemicals in sediment - Recreational site users, especially children, could wade or play in the creek, resulting in skin contact with sediment.

- Incidental ingestion of chemicals in sediment - Recreational site users, especially children, could wade or play in the creek. Sediment could adhere to the skin of someone playing or wading in the creek, and some incidental ingestion of sediment could occur.

The concept of redevelopment of the landfill for an active end use presents the possibility of potential exposure at the surface of the landfill, but does not affect the potential risks at the landfill associated with groundwater use. Results of the 2003 exposure and risk assessment indicated that the existing remedy (capping; landfill gas control and destruction; and leachate collection, treatment and disposal) is protective under the potential conditions of surface reuse. There are no potential exposure pathways or site-related chemicals that pose unacceptable risks to site users or that warrant further quantitative risk evaluation. This is based on the following:

- Past quantitative risk assessment that addressed preremedial action conditions

- Screening of known chemical concentrations against health-protective human health and ecological risk-based values for any media where there may be a potential for human or ecological exposure

- Assumption that the general public has free access to the site for potential recreational uses

- Assumption that redevelopment does not result in the creation of new exposures

The clean cover soil that was added as part of the RA construction and final end use plan development, limits exposure to site-related chemicals from contact with surface soil. From a risk standpoint, there is no significant difference in exposure intensity between trespassing, as considered in the BLRA, and recreational use, as considered in the final end use plan risk assessment. If exposure to contaminated soil were to occur, risks from chemicals in soil would be below levels of concern. Although on-site air concentrations were not available for evaluation, the current remediation system controls fugitive LFG and destroys VOCs through combustion. Based on the performance of similar gas management systems, VOC concentrations at the landfill surface are expected to be very low. Any chemicals detected in Sequoit Creek are at low concentrations and would not pose a risk to a child or teenager occasionally wading or playing in the creek.

This 2003 risk assessment assumes that, for any redevelopment activities, the integrity of the existing site remedy will be maintained, and that the existing landfill gas and leachate collection systems will remain in operation. This includes maintaining a minimum 3 feet of cover soil, avoiding penetration of the minimum 2-foot compacted clay layer under the vegetative layer, and maintaining vegetative cover. Also, it is necessary to maintain grading of the landfill cover to promote controlled surface water runoff and to limit infiltration of water through the cover. All redevelopment activities must be specifically designed for compatibility with the existing remedy. Critical design parameters associated with the future land uses include, for example, grading modifications, extent of foundations, paving, signage, fencing, etc.

VI. Five-Year Review Process

A. Administrative Components

In its October 25, 2004 letter to the IEPA Project Manager, Greg Ratliff, U.S. EPA notified IEPA of its intention to conduct the Statutory Five-Year Review of the H.O.D. Landfill Site in Antioch, Illinois. The H.O.D. Landfill Review team was led by Karen Mason-Smith, U.S. EPA Remedial Project Manager (RPM). The review team's responsibility included the following components:

- Community Involvement
- Document Review

- Data Review
- Site Inspection
- Risk Information Review, and
- Local Interviews (on request)

B. Community Involvement

Activities to involve the community in the five-year review were initiated with a meeting in February 2005 between the RPM (Ms. Karen Mason-Smith) and the Community Involvement Coordinator (Mr. Mike Joyce). In coordination with Mike Joyce and Karen Mason-Smith, U.S. EPA placed an advertisement in the Lakeland Newspaper on May 13, 2005 and Advertiser Newspaper on May 11, 2005 to notify the local residents of its intention to conduct the five-year review and to solicit public comments on matters relating to the H.O.D. Landfill Site.

C. Document Review

The five-year review consisted of a review of the following relevant documents:

1. Record of Decision (09/28/1998) for H.O.D Landfill Site

2. Consent Decree to perform Remedial Design/Remedial Action for the H.O.D. Landfill Site (04/14/1999)

3. H.O.D. Landfill Remedial Action Operation and Maintenance Annual Report for 2004

4. Surface Water, Sediments, Leachate, private residential water wells, and groundwater monitoring data for 2004 and 2005.

5. Village of Antioch Water Works and Sewage Ordinance prohibiting the installation of groundwater drinking water wells within certain areas.

D. Data Review

Groundwater, Surface Water, Leachate, Sediments and Private Well Water Monitoring

WMII regularly conducts monitoring of groundwater wells, leachate wells, landfill cap, landfill gas management system and surface water on a quarterly basis. This five-year review will compare the analytical results to both federal and state standards. Federal Standards are the National Primary and Secondary Drinking Water Standards. State Standards include the most current State of Illinois EPA Groundwater Quality Standards for Class I (drinking water) groundwater.

Groundwater Monitoring

The groundwater monitoring is conducted quarterly from 16 groundwater monitoring points. Groundwater samples collected and groundwater elevations are measured at this locations. Groundwater monitoring well MW-3D is in the deep sand and gravel aquifer and is impacted with chlorinated solvents such as cis 1,2– DCE and trans 1,2– DCE and Vinyl Chloride. The concentrations of the compounds are considered to be steady.

The concentration of vinyl chloride in the shallow groundwater monitoring well W-6S has increased significantly. Exceedances of the groundwater protection standard were identified in Monitoring Wells US-1D, US-2D, US-3D, US-5D. These monitoring wells are located in the deep sand and gravel aquifer. Exceedance of the groundwater protection standard were also identified in Monitoring Wells G-102m US-4S and W-6S. These monitoring wells are located in the shallow aquifer.

Surface Water Monitoring

Surface water samples were collected from Sequoit Creek from an upstream location and a down stream locations. The results of surface water result do not show significant impact to Sequoit Creek.

Leachate Monitoring

Leachate levels were taken monthly during the 1st year of operation; and following the 1st year of operation the leachate levels were taken quarterly. Based on the leachate monitoring it appears that the leachate mound within the landfill is decreasing steadily at majority of locations. However, the elevations collected from leachate wells GW29, LP10, GW21, GWF2 and GWF10 appear to be lagging behind in achieving required inward gradient within 12 years. No leachate outbreaks were documented during the review period.

Landfill Gas Monitoring

Landfill gas is monitored in perimeter gas probes and gas extraction wells heads. The monitoring system has shown that the landfill gas is not migrating offsite. The landfill gas monitoring points GW-15, GW-17, GW-25, GW-32, LP-2, LP-3, and MH-3 have shown presence of high oxygen, suggesting potential leaks of atmospheric air into the system.

E. Site Inspection

Karen Mason-Smith (U.S. EPA RPM), Omprakash Patel of Weston Solutions Inc. (U.S. EPA Oversight Contractor), Larry Beuchle of WMII (PRP), Mark Torresani of RMT Inc. (PRP's contractor) and Michael Amstadt of RMT (PRP's contractor) conducted a site inspection on July 28, 2005. A site inspection was also conducted on November 19, 2004 by the U.S. EPA RPM, Weston Solution Inc., WMII and RMT. The purpose of the inspections were to determine

current site conditions and to assess the protectiveness of the remedy. The following site conditions were observed and noted:

Fencing was generally found to be in good condition with appropriate signage. Gates were locked, and there was no evidence of unauthorized access to the site. The landfill cap was generally found to be in good condition. There were no cracks or eroded areas observed during the site inspection. There were also no areas of disturbance, such as animal burrows. There were areas of settling observed around the vaults. Several piles of soil were placed on the western two thirds of the site for building athletic fields for the High School. The presence of these piles of soil have locally changed the surface water drainage pattern at the site. No ponded water was observed at the site. Waste Management indicated that the landfill is mowed at least twice a year. No leachate outbreaks were observed during the site visit.

F. Risk Information Review

The following applicable or relevant and appropriate requirements (ARARs) were reviewed for changes that could affect protectiveness:

- State of Illinois Environmental Protection Agency (IEPA) Groundwater Quality Standards for Class I (drinking water) groundwater. This requirement states that concentrations of the listed inorganic and organic chemical constituents must not be exceeded in Class I groundwater, except due to natural causes or as provided in 35 Illinois Administrative Code (IAC) 620.450 (Alternative Groundwater Quality Standards).

- IEPA 35 IAC 807 Solid Waste

- IEPA 35 IAC 811 Standards for New Solid Waste Landfills; post-closure care (including leachate collection) requirements; leachate treatment, storage and disposal requirements; and gas management, collection, processing and disposal requirements. Compliance with leachate treatment and disposal requirements will be achieved by trucking the leachate to a permitted POTW and properly treating the leachate at the POTW.

G. Interviews

Interviews were conducted with the PRP and its subcontractors during the site inspection.

VII. Technical Assessment

The review of documents, ARARs, risk assumptions, and the results of the site inspection indicates that the remedy is functioning as intended by the ROD. Operation and Maintenance of the landfill cap and the H.O.D. Landfill Gas and Leachate Collection system has, on the whole, been effective. The extracted leachate is being stored in 20,00 gallon tanks and transported

offsite for disposal. The gas is effectively being removed and flared at the site or utilized by the gas to energy system. In order to address some areas, the PRPs will be asked to increase the extraction of leachate from some areas, repair the area settled around the vaults, and evaluate if the oxygen is leaking into some of the gas management system. The landfill cap is adequately maintained. The fence, gates and signs are in good condition. The groundwater has constituents exceeding federal and state groundwater standards. The contamination in the deep sand and gravel aquifer appears to be stable.

The technical assessment includes an evaluation of the following questions:

Is the remedy functioning as intended by the decision document? Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives (RAOs) used at the time of remedy selection still valid?

Yes. The ROD intends that the landfill caps on the 24.2 acre "old landfill" and the 26.8 acre "new landfill" remain in place indefinitely to prevent exposure to underlying solid and hazardous waste. Maps delineating the two landfill sections are shown on the attached Site Diagram. Land use restrictions that prohibit interference with the cap are necessary for the remedy to function as intended. Under the ROD and ESD, the owner must execute and record a restrictive covenant (reservation in the Site deed) that notifies potential purchasers of past landfill activities; and states that land use must be restricted to ensure the continued integrity of the cap as a waste containment remedy. An institutional control (IC) plan will be developed to implement the restrictive covenant by October 31, 2005.

The institutional controls that are in place include the prohibition of consumptive or other use of groundwater underlying the Site's property that would cause exposure of humans or animals to such groundwater. The Village of Antioch Water Works and Sewage Ordinance Section 8-1-1 (formerly codified as Sections 52.009 and 52.011) requires use of the public water supply and sewer rather than permitting installation of groundwater drinking wells. Evaluation of the village ordinance will be included in the IC plan. Institutional controls are necessary to prohibit interference with the landfill caps at the Site, as provided for in the ROD. An IC implementation plan will be developed within 6 months of this report.

Has any other information come to light that could call into question the protectiveness of the remedy?

No information was identified during the five-year review that calls into question the protectiveness of the current remedy.

VIII. Issues

The following issues were identified for the site:

- Settling was observed around the vaults. The settling around the vaults has not altered the overall drainage pattern. However locally, the surface water drainage at the site may have been altered due to placement of piles of soil for building athletic fields on site. Once the athletic fields are built at the site the surface water drainage might be locally modified.

- The inward gradient might be lagging behind in areas where leachate wells GW29, LP10, GW21, GWF2 and GWF10 are present.

- Oxygen may be leaking into the gas management system at locations GW-15, GW-17, GW-25, GW-32, LP-2, LP-3, and MH-3.

IX. Recommendations and Follow-up Actions

Recommendation and Followup Action	Party Responsible	Oversight Agency	Milestone Date	Affects Current Protectiveness	Affects Future Protectiveness
Submit IC Plan to evaluate effectiveness of existing Institutional Controls for land and groundwater restrictions. Also, implement ICs to prohibit interference with cap.	EPA (will ask WMII to submit Plan)	EPA	10/31/05	No	Yes
Improve Drainage and fill settled areas in northwest portion of the landfill	WMII	EPA	06/30/06	No	Yes

X. Protectiveness Statement

The remedy is functioning as intended and is currently protective of human health and the environment. The Village Ordinance effectively prohibits the use of contaminated groundwater at and near the landfill site. The site fence, landfill cap, landfill gas management system, leachate collection and storage system are functional and meeting the objectives outlined in the ROD. Long term protectiveness requires full implementation of, and compliance with, restrictions that prohibit interference with the landfill caps and prohibit well drilling or consumption of affected groundwater until groundwater cleanup standards are achieved.

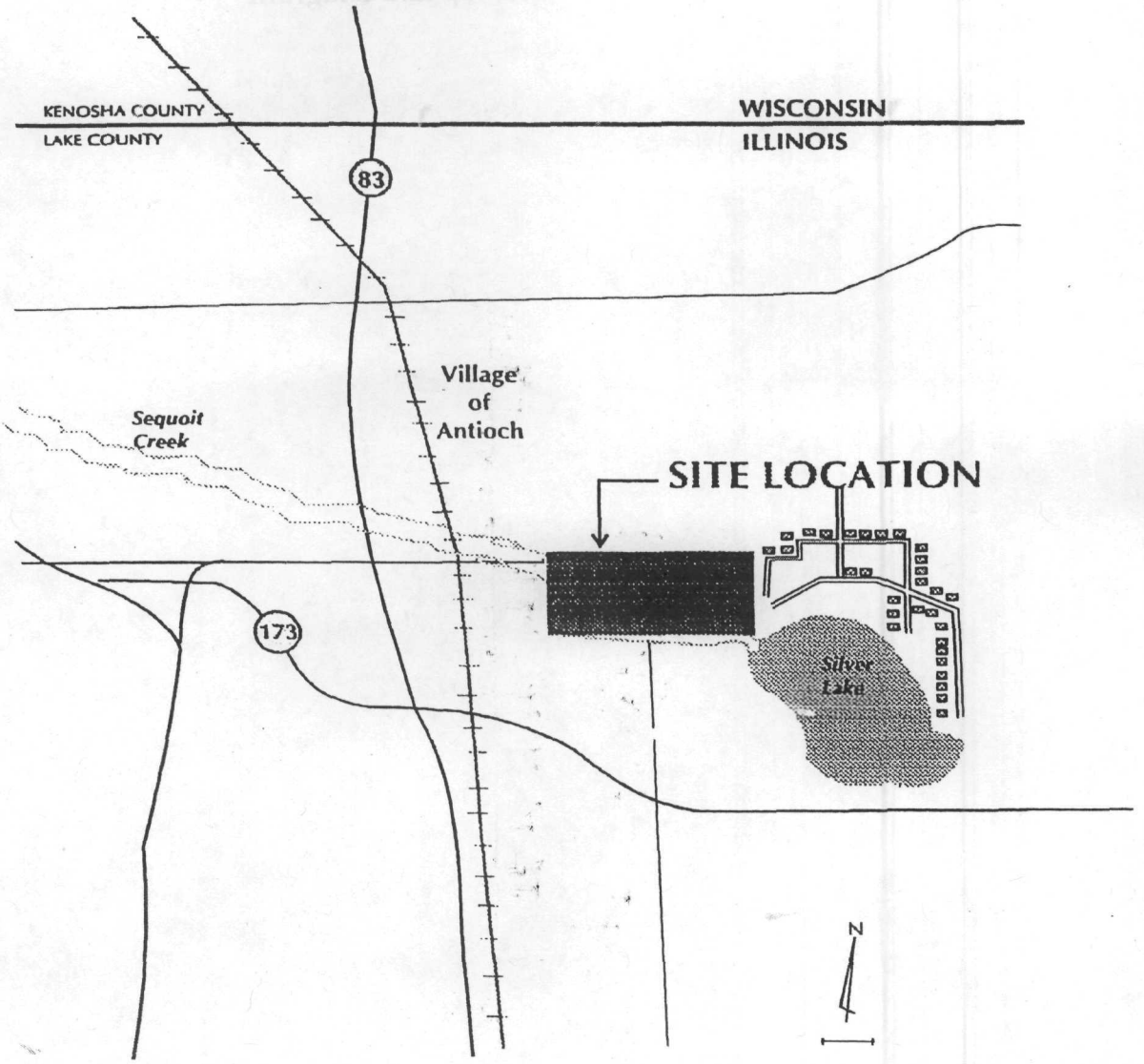
XI. Next Review

This is a statutory site that requires on going five-year reviews. The next review for the H.O.D. Landfill Site is required by September 30, 2010, five years from the date of this review.

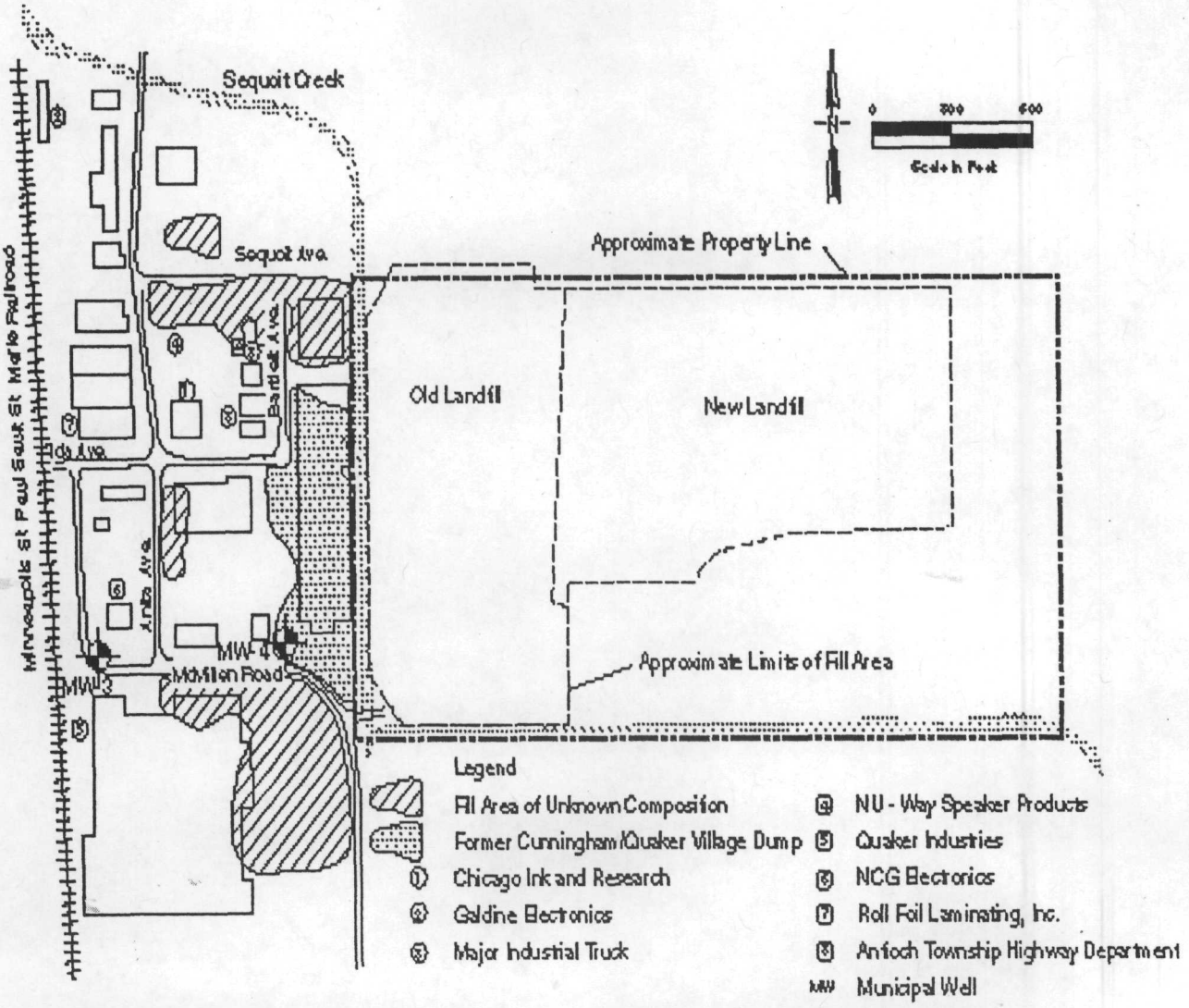
Attachment A

Site Map and Diagram

SITE LOCATION MAP



SITE DIAGRAM



NOTE: Base map developed from environmental audit for Sequit Acres Industrial Park by Patrick Engineering Inc, Dated 1989.

SEP-1990

Attachment B

Tables

Table 2
Groundwater Analytical Program
HOD Landfill 5-Year Review

INORGANIC CHEMICAL CONSTITUENTS[1]	
Antimony	Gross-beta
Arsenic	Tritium[2]
Barium	Strontium[2]
Beryllium	Lead
Boron	Manganese
Cadmium	Mercury
Chloride	Nickel
Chromium	Nitrate as N
Cobalt	Radium-226
Copper	Radium-228
Cyanide	Selenium
Fluoride	Silver
Iron	Sulfate
	Thallium
	Total dissolved solids (TDS)
	Zinc
ORGANIC CHEMICAL CONSTITUENTS	
Alachlor	trans-1,2-Dichloroethene
Aldicarb	1,2-Dichloropropane
Atrazine	Ethylbenzene
Benzene	Methoxychlor
Benzo(a)pyrene	Monochlorobenzene
Carbofuran	Pentachlorophenol
Carbon tetrachloride	Phenols
Chlordane	Picloram
Dalapon	Polychlorinated biphenyls (PCBs) (as decachloro-biphenyl)
Dichloromethane	Simazine
Di(2-ethylhexyl)phthalate	Styrene
Dinoseb	2,4,5-TP (silvex)
Endothall	Tetrachloroethene
Endrin	Toluene
Ethylene dibromide	Toxaphene
Heptachlor	1,1,1-Trichloroethane
Heptachlor epoxide	1,1,2-Trichloroethane
Hexachlorocyclopentadiene	1,2,4-Trichlorobenzene
Lindane (gamma-hexachlorocyclohexane)	Trichloroethene
2,4-D	Vinyl chloride
ortho-Dichlorobenzene	Xylenes
para-Dichlorobenzene	
1,2-Dibromo-3-chloropropane	
1,2-Dichloroethane	
1,1-Dichloroethene	
cis-1,2-Dichloroethene	

Table 2 (continued)
Groundwater Analytical Program
HOD Landfill 5-Year Review

MNA MONITORING PLAN PARAMETERS[3]	
Total organic carbon (TOC)	Sulfate
Biological oxygen demand (BOD)	Sulfide
Nitrate as nitrogen	Alkalinity
Nitrite as nitrogen	Conductivity[4] (SC)
Ammonia as nitrogen	Dissolved oxygen[4] (DO)
Total Kjeldahl nitrogen (TKN)	pH[4]
Orthophosphate	Temperature[4]
Methane	Oxidation reduction potential[4] (ORP)
Chloroethane	
Ethane	
Ethene	

Footnotes:

(1) Dissolved

(2) To be determined only if gross-beta value exceeds 50 pCi/L, per 40 CFR 141.

(3) Groundwater samples collected from monitoring wells PZ4U, PZ3U, US6S, US4S, W6S, and G102 are not analyzed for the MNA monitoring plan parameters.

(4) Field parameters.

Table 3
Surface Water Analytical Program
HOD Landfill 5-Year Review

ANALYTE	
Laboratory Constituents	
Arsenic[1]	Boron[1]
Cadmium[1]	Chloride[1]
Chromium - hexavalent[1]	Fluoride
Chromium - trivalent[1]	Iron[2]
Copper[1]	Manganese[1]
Cyanide[1]	Nickel
Lead[1]	Phenols
Mercury[1]	Selenium[1]
Barium[1]	Silver[1]
	Sulfate
	Total dissolved solids
	Zinc[1]
	Total ammonia nitrogen
	Un-ionized ammonia
	1,2-Dichloroethene (total)
	Trichloroethene
	Vinyl chloride
	Carbon disulfide
Field Parameters	
pH	
Dissolved oxygen	
Temperature	
Specific conductance	

Footnotes:

[1] Total

[2] Dissolved

Notes:

1. Source: 35 IAC 302.202 - 302.212.
2. Total residual chlorine (TRC) is not included in the surface water analytical program because there is only a need to monitor for TRC at facilities where there is periodic chlorination of discharge waters.
3. Phosphorus is not included in the surface water analytical program because Sequoit Creek does not enter a reservoir or lake in the vicinity of the landfill. 35 IAC 302.205 states that the phosphorus standard applies to any reservoir or lake with a surface area of 8.1 hectares or more, or to any stream at the point where it enters any such reservoir or lake.
4. Fecal coliform is not included in the surface water analytical program because the fecal coliform standard applies to effluents (35 IAC 304.121).
5. Surface water samples will not be analyzed for gross beta, radium 226, and strontium 90. Radioactive parameters are not expected to be present as a result of landfilling activities at the H.O.D. Landfill.

Table 4

Leachate Analytical Program
HOD Landfill 5-Year Review

PARAMETERS		FREQUENCY
BOD; COD; TSS; Fe_{total}; pH; chloride; tetrachloroethene; trichloroethene; cis-1,2-dichloroethene; trans-1,2-dichloroethene; 1,1-dichloroethene; chloroethene		Quarterly (during the first, second, and third quarters of each monitoring year), then twice per year (referred to as quarterly/semiannual leachate in Table 1-3 of the QAPP)
Inorganic Chemical Constituents:	Organic Chemical Constituents:	Annually (during fourth quarter of each monitoring year) (referred to as annual leachate in the QAPP)
Antimony Arsenic Barium Beryllium Boron Cadmium Chloride Chromium Cobalt Copper Cyanide Fluoride Iron Gross-beta Tritium(1) Strontium(1) Lead Manganese Mercury Nickel Nitrate as N Radium-226 Radium-228 Selenium Silver Sulfate Thallium Total dissolved solids (TDS) Zinc plus COD, TSS, BOD, pH	Alachlor Aldicarb Atrazine Benzene Benzo(a)pyrene Carbofuran Carbon tetrachloride Chlordane Dalapon Dichloromethane Di(2-ethylhexyl)phthalate Dinoseb Endothall Endrin Ethylene dibromide Heptachlor Heptachlor epoxide Hexachlorocyclopentadiene Lindane (gamma-hexachlorocyclohexane) 2,4-D ortho-Dichlorobenzene para-Dichlorobenzene 1,2-Dibromo-3-chloropropane 1,2-Dichloroethane 1,1-Dichloroethene cis-1,2-Dichloroethene trans-1,2-Dichloroethene 1,2-Dichloropropane Ethylbenzene Methoxychlor Monochlorobenzene Pentachlorophenol Phenols	

Table 4 (continued)
Leachate Analytical Program
HOD Landfill 5-Year Review

PARAMETERS		FREQUENCY
Inorganic Chemical Constituents:	Organic Chemical Constituents:	
	Picloram Polychlorinated biphenyls (PCBs) (as decachloro-biphenyl) Simazine Styrene 2,4,5-TP (silvex) Tetrachloroethene Toluene Toxaphene 1,1,1-Trichloroethane 1,1,2-Trichloroethane 1,2,4-Trichlorobenzene Trichloroethene Vinyl chloride Xylenes	

Footnote:
(1) To be determined only if gross-beta value exceeds 50 pCi/L, per 40 CFR 141.

Table 5
Historical VOC Concentrations at Groundwater Monitoring Well US-3D
HOD Landfill 5-Year Review

DATE	CONCENTRATIONS (µg/L)		
	CIS-1,2-DICHLOROETHENE	TRANS-1,2-DICHLOROETHENE	VINYL CHLORIDE
May 1993	11 (total 1,2-dichloroethenes)		28
March 1994	18 (total 1,2-dichloroethenes)		35
February 2000	120	27	19
March 2000	120	25	19
February 2002	150 D	38 D	15
May 2002	180	44	16 J
August 2002	200	44	11 J
November 2002	170/180	43/46	18 J/17 J
February 2003	180	42	15 J
May 2003	170	41	13 J
August 2003	200	51	17 J
November 2003	170	45	14 J
February 2004	180 D	52	14 J
May 2004	210	55	14 J
August 2004	180	43	11 J
November 2004	200	54	16 J

Notes:
J = reported value is less than the reporting limit, but greater than zero.
D = analyte value is from a diluted analysis.

Updated by: GLB, 6/05
Checked by: NFB, 6/05

Table 6
Natural Attenuation Geochemical Parameters in DSGA Well US-3D
HOD Landfill 5-Year Review

ANALYSIS	INTERPRETATION	PDI RESULT	2002-2004 RESULTS
Dissolved oxygen	<0.5 mg/L most conducive for reductive dechlorination pathway; >5 mg/L not tolerated by anaerobic organisms	≤1 mg/L	0.1 to 1.3 mg/L
Nitrate	<1 mg/L indicative of no competition between nitrate and the reductive pathway	<0.05 mg/L	<2 mg/L
Iron (II)	>1 mg/L supportive of reductive pathway	>3 mg/L	2.5 to 3.6 mg/L
Manganese	Increased concentrations over background suggestive of conditions conducive to reductive pathway(1)	>8 times background	2.3 to 4.5 times background
Sulfate	>20 mg/L suggestive of competition with reductive pathway	>40 mg/L	47 to 76 mg/L
Methane	>0.5 mg/L indicative of strongly reducing conditions conducive to reductive pathway	0.32 mg/L	0.014 to 0.16 mg/L
Redox potential	<-100 mV makes the reductive pathway likely	-43 to -98 mV	-52 to -127 mV
pH	5 to 9 s. u. is optimal range for reductive pathway	7.1 to 7.4 s. u.	7.1 to 8 s. u.
Alkalinity	A doubling of alkalinity over background suggestive of increased microbial activity(1)	1.7 times background	1.7 to 2.1 times background
Organic carbon	>1 mg/L provides the energy needed by microbes to live	2 mg/L	1.2 to 2.8 mg/L

Footnote:
(1) Chemistry results from well US-5D, northwest of the landfill, are used for background comparisons.

Updated by: GLB, 6/05
Checked by: NFB, 6/05

Attachment C

Village of Antioch Ordinances

[**Note:** These ordinances were recodified subsequent to U.S. EPA's ROD. The codification referred to in the ROD is in parentheses after each recodified provision. The ordinances were retrieved from the Village of Antioch's code website, at the following url: <http://66.113.195.234/IL/Antioch/index.htm>.]

8-1-1: MANDATORY CONNECTIONS REQUIRED:

A. Use Of Public Water Supply And Sewer Required: It shall be the duty of the owner, occupant or party or parties in possession of any house, structure, factory, industrial or commercial establishment or any other building of any other character located on property abutting on the public waterworks and sewerage system, to cause such house, structure, factory, industrial or commercial establishment or any other building of any other character to be connected with the said waterworks and sewerage system within ninety (90) days from the date that water or sewerage facilities become available to such property, whichever is the event last to occur. (1976 Code § 52.009)

B. Mandatory Water Supply And Sewer Extensions: Any person required under the provisions of this chapter to connect to the public water system of the village or any person desirous of connecting to the public water system is required, at his expense, to extend any water line through the entire frontage or depth of the person's property as the case may be, to the end of the person's property line. It is the intent of this subsection to provide that all extensions of public water lines shall be to the end of any person's property, thus making future extensions more readily accessible to adjacent property owners. (1976 Code § 52.011)

C. Enforcement: A copy of this chapter, properly certified by the village clerk, shall be filed in the office of the recorder of deeds of Lake County, and shall be deemed notice to all owners of real estate of their liability for service supplied to any user of the service of the combined waterworks and sewerage system of the village on their properties, and it shall be the duty of the village clerk and such other officers of this village to take all action necessary or required by the laws of the state of Illinois thereunto enabling to file all claims and liens for money due to the village and to prosecute and enforce such claims in the manner, form and time as permitted by the laws of the state of Illinois. (1976 Code § 52.010)

8-2-2: USE OF PUBLIC SEWERS REQUIRED:

A. Mandatory Connections:

1. Sewer Hookups: The owner of all houses, buildings or properties used for human occupancy, employment, recreation or other purposes, situated within the village and abutting on any street, alley or right of way in which there is now located or may in the future be located a public sanitary sewer of the village, is required, at his expense, to install suitable toilet facilities therein and to connect such facilities directly with the proper public sewer within ninety (90) days after the official notice to do so; provided, that said public sewer is within two hundred feet (200') of the property line. (1976 Code § 50.008)

2. Public Sewer Line Extensions: Any person required under the provisions of this chapter or any ordinance to connect suitable toilet facilities to the public sewer system of the village, or any person desirous of connecting suitable toilet facilities to the public sewer system of the village, is required at his expense to extend the line through the entire frontage or depth of the person's property as the case may be, to the end of the person's property line. It is the intention of this section to provide that all extensions of the public sewer line shall be to the end of any person's property, thus making future extensions more readily accessible to adjacent property owners. (1976 Code § 50.009)

B. Prohibited Acts:

1. Depositing Wastes: It shall be unlawful for any person to place, deposit or permit to be deposited in any unsanitary manner on public or private property within the village, or in any area under the jurisdiction of the village, any human or animal excrement, garbage or other objectionable waste. (1976 Code § 50.005)

2. Discharge Of Wastes: It shall be unlawful to discharge to any natural outlet, watercourse or storm sewer within the village, or in any area under the jurisdiction of the village, any sewage or other polluted waters, except where suitable treatment has been provided in accordance with the provisions of this chapter. (1976 Code § 50.006)

3. Construction Of Sewage Facilities: Except as hereinafter provided, it shall be unlawful to construct any privy, privy vault, septic tank, cesspool or other facility intended or used for the disposal of sewage. (1976 Code § 50.007)